

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
10 March 2005 (10.03.2005)

PCT

(10) International Publication Number
WO 2005/021031 A2

(51) International Patent Classification⁷: **A61K 39/02**

(21) International Application Number:
PCT/US2004/027896

(22) International Filing Date: 26 August 2004 (26.08.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/498,988 29 August 2003 (29.08.2003) US
60/498,961 29 August 2003 (29.08.2003) US

(71) Applicant (for all designated States except US): **AKZO NOBEL N.V. [NL/NL]**; Velperweg 76, 6824 BM Arnhem, NL-6824 Arnhem (NL).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **COHEN, Paul, S.** [US/US]; 22 Whitney Court, Narragansett, RI 02882 (US).

(74) Agent: **RAMEY, William, P., III**; Akzo Nobel Pharma Patent Department, P.O. Box 318, 29160 Intervet Lane, Millsboro, DE 1966 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2005/021031 A2

(54) Title: **LIVE ATTENUATED BACTERIAL VACCINE**

(57) Abstract: The present invention relates to live attenuated bacteria for use as a medicament. The invention also relates to vaccines based upon these live attenuated bacteria that are useful for the prevention of microbial pathogenesis. Also, the invention relates to the use of live attenuated bacteria for the manufacture of a vaccine. Finally, the invention relates to methods for the preparation of such vaccines.